December 26, 2001

Denise Gruben, Project Manager
Contract and Engineering Services Section
Operation Services Division
Finance and Operations Services Bureau
530 West Allegan Street
Lansing, MI 48933

SUBJECT: REPORT OF THE MEETING HELD TO DISCUSS DOSE MODELING AND DCGL DERIVATION IN CONNECTION WITH THE PREPARATION OF THE DECOMMISSIONING PLAN FOR THE MICHIGAN DEPARTMENT OF NATURAL RESOURCES SITE, BAY COUNTY, MI

Dear Ms. Gruben:

On December 14, 2001, the U.S. Nuclear Regulatory Commission staff met with the representatives of the Michigan Department of Natural Resources (MDNR) at the request of the MDNR staff to discuss key issues of the dose modeling and derived concentration guide line value in connection with the preparation of the decommissioning plan for the MDNR Site Decommissioning Management Plan (SDMP) site in Bay County, MI. You participated in the proceedings of the meeting via telephone/speaker system. On November 21, 2001, a public meeting notice was published announcing the December 14, 2001, meeting. NRC's Public Meeting Feedback Form No. 659 was distributed at the meeting. A report of this meeting including a list of the participants is enclosed.

If you have any questions concerning this report, please contact me at (301) 415-6694.

Sincerely,

/RA/

M. (Sam) Nalluswami, Project Manager
Facilities Decommissioning Section
Decommissioning Branch
Division of Waste Management
Office of Nuclear Material Safety
and Safeguards

Enclosure: Meeting Report
cc: MDNR Distribution List

Docket No.: 40-9015
License No.: SUC-1581

MEETING REPORT

DATE: December 14, 2001

TIME: 9:30 a.m. - 12:00 p.m.

PLACE: U. S. Nuclear Regulatory Commission (NRC)
11545 Rockville Pike
Rockville, MD 20852
Room T-10C1

PURPOSE: To discuss dose modeling and derived concentration guideline (DCGL) derivation in connection with the decommissioning plan to be developed for the Michigan Department of Natural Resources (MDNR) Site Decommissioning Management Plan (SDMP) site, in Bay County, Michigan.

ATTENDEES: See Attachment A.

BACKGROUND:

The MDNR's SDMP site, located in Bay County, Michigan, is part of the former Hartley & Hartley Landfill, and is currently known as the Tobico Marsh State Game Area. The 3 acre landfill site is contaminated with thorium radionuclides from slag and covered with a 1.5 m (5 ft) thick clay cap and encapsulated with 0.9 m (3 ft) thick bentonite slurry walls. The NRC license (SUC-1581) is for possession only. In accordance with the amended condition 10A of the license, the decommissioning plan (DP) must be submitted no later than August 31, 2002.

DISCUSSION:

After the greetings and introductions, the NRC staff explained the open meeting policy including placement of the meeting report in the docket file and handling of any proprietary documents submitted by the licensee.

Progress Made To-date

MDNR's consultants stated that the slurry walls and clay cap were installed in 1985 and that they were primarily constructed to contain non-radioactive wastes. A scoping survey was performed in 1997 and the report on its results was released in 1998. The characterization survey was performed in 2000, and the report containing its results was released in 2001. The characterization results showed that there are no radioactive wastes outside the slurry walls. However, the major effort of this work was to characterize the materials within the slurry walls so that DCGLs could be generated.

Other items discussed by the MDNR's consultants and the NRC staff were the following:

1. MDNR believes that the vertical and horizontal extent of radioactive waste, including concentration and isotopic distribution, are important considerations.

ENCLOSURE

2. NRC staff recommended that the physical and chemical descriptions of the thorium slag be included in the characterization report.
3. MDNR's consultants stated that the slag was illegally dumped primarily along the road through the site with some spreading. The slag, which was dumped in barrels and loose, was eventually covered by sand. Also, their analysis indicates that the slag is neither moving laterally nor vertically.

The sampling techniques, analytical methods, and resultant data pertaining to the MDNR scoping and characterization surveys were also discussed. NRC staff identified inconsistencies in soil sampling techniques used during the scoping and characterization surveys and discussed its impact on the quantitative determination of thorium concentrations in soil (unconsolidated sediments). Staff indicated that based on this and other related issues of significance regarding the conduct of the scoping and characterization surveys (e.g., survey instrument calibration and soil sample preparation), MDNR still needs to adequately demonstrate that direct correlation of count rate measurements to isotopic concentrations in the subsurface can be done using gamma logging. NRC staff generally considers the use of gamma logging for screening purposes only. Also, the NRC staff informed MDNR that additional justification needs to be provided for selection of the ratio(s) used to relate Th-230 to Th-232 in slag/soil as the ratio is used to establish the concentration of Th-230, a critical factor in determining the need to conduct remediation.

Land Use Scenario

An understanding of the land use at this site is required to build a conceptual dose model. The licensee was asked to provide justification that the land use at the site and nearby areas supports the use of the recreational/naturalist scenario over the default resident farmer scenario. Normally, the default land use is resident farmer scenario. With the recreational/naturalist scenario, a dose will only occur if the clay cap is violated or penetrated. Recreational land use will not have any water wells (i.e., drinking water pathway). It was suggested to consider multiple scenarios - such as slurry wall deteriorating, marsh may not exist in a 1000-year period, etc. The licensee should address reasonable land use scenarios during a 1000-year period. They need to address the integrity of the slurry wall. Will it be maintained during a 1000-year period? The site is part of a much larger State game area that the licensee believes will be maintained in the future as a State game area. This appears to be contradictory to the unrestricted use criteria for the land. A discussion of the slurry wall failure and holes in the clay cap at the adjacent site and whether this could happen at the MDNR site should be discussed during the next meeting.

Dose Modeling and DCGL

The derivation of the DCGL is dictated by an unrestricted release standard of 25 mrem/year. NRC staff mentioned that the concentrations of the radionuclides are needed regardless of whether the dose modeling is based upon forward (dose levels) or inverse (DCGLs) procedures. The licensee staff stated that they plan to use the inverse procedures, that is derive DCGLs. The performance level for this site will be a dose of 25 mrem/year. Critical parameters for the RESRAD model are cover erosion and fraction of outdoor time. When it was proposed that recreational (hunter)/naturalist could also eat berries, it was mentioned that the root depth of the berries would be important. The licensee discussed using RESRAD when the contaminant

layer is saturated. The licensee has discussed this with Argonne National Laboratory (ANL). ANL suggested running RESRAD with the saturated contaminant layer as an unsaturated contaminant layer with physical and hydrological properties representing saturated conditions.

Radiological Survey and Related Information

NRC staff asked MDNR to explain why the method used during site characterization to sample and survey for subsurface thorium contamination was not consistent with that done during the scoping survey. Specifically, for the scoping survey, subsurface count rate measurements were done at the same location where soil samples were taken to determine isotopic concentrations; whereas, for the characterization survey, soil samples were taken from core bores that were 1 to 3 feet from the location of the count rate measurement. Also, for the characterization survey, the staff expressed concern that MDNR did not adequately demonstrate that gamma logging count rate measurements can be directly correlated to isotopic concentrations. Thus, further justification needs to be provided by the MDNR to substantiate the adequacy of the instrument calibration procedures. NRC staff also indicated that the decommissioning plan will need to include a physical description of the slag material and how samples were taken and processed to account for the size of the slag material.

Aerial photographs show white piles of slag. The radiological surveys, for the most part, confirm what is derived from the aerial photographs. The following information presented by the MDNR representatives require proper justification with supporting data: the slag is immobile with a high Kd in the soil and rock materials; thorium has not been observed in the leachate or ground water; no plume (radiological or non-radiological) has been observed outside the slurry walls; the material does not meet RCRA criteria for hazardous waste and, therefore, is not considered a mixed waste.

The Michigan Department of Environmental Quality (MDEQ) regulates chemical and other non-radiological wastes. Potential for the increase in solubility of the thorium slag in chemically contaminated water should be considered.

ACTION ITEMS:

1. The MDNR will submit a separate characterization report with DCGL calculations prior to the submittal of the DP.
2. MDNR will discuss scenario(s) in a meeting and submit justification - April 2002
3. MDNR will submit a DCGL report - June 2002
4. MDNR will submit a decommissioning plan - August 2002

ATTACHMENT:

A. Meeting Attendees

MEETING ATTENDEES

Topic: Dose Modeling and DCGL derivation for the Michigan Department of Natural Resources Site

Date: December 14, 2001

NAME	AFFILIATION	PHONE NUMBER
Claudia Craig	NRC/DWM/DCB	301-415-6602
Mark Thaggard	NRC/DWM/EPAB	301-415-6718
Jon Peckenpaugh	NRC/DWM/EPAB	301-415-6753
Denise Gruben (by phone)	MDNR	517-335-4036
Rick Dunkin	Harding ESE	248-926-4008
Jeff Lively	Mactec	970-243-2861
Sam Nalluswami	NRC/DWM/DCB	301-415-6694
Stewart Schneider	NRC/DWM/DCB	301-415-7765

Attachment A

Attachment A